

CLAIMS

What is claimed is:

1. A method for producing a mechanical part, including prototype parts, from a specific computer-aided design, comprising the steps of:

manufacturing a plurality of unitary laminations including central portions forming a plurality of elemental layers having a desired shape and a desired thickness for defining the mechanical part, wherein the elemental layers are defined by a prior breakdown of the mechanical part along a plurality of planes, outer portions having substantially the same thickness as the central portions, at least partially surrounding the central portions and including orifices formed therein, and a plurality of frangible bridges connecting the central portions and the outer portions together;

building up the plurality of unitary laminations by engaging the orifices of the outer portions with an aligning element, and forming a self-supporting structure, combining the elemental layers defined by the central portions of the unitary laminations and assembling a built up plurality of the elemental layers to produce the mechanical part, and combining the outer portions of the unitary laminations and assembling a built up plurality of the outer portions to produce an outer surround connected to the mechanical part by the frangible bridges; and

severing the frangible bridges connecting the built up plurality of the elemental layers which produce the mechanical part and the built up plurality of the outer portions which produce the outer surround, and removing the outer surround formed from the combined outer portions of the unitary laminations from the mechanical part formed from the combined elemental layers forming the mechanical part and separating the mechanical part from the outer surround.

2. The method of claim 1 which further includes the step of forming circular orifices in the outer portions of the unitary laminations, for positioning the unitary laminations and for assembling the unitary laminations together.

3. The method of claim 1 which further includes the step of forming orifices having a polygonal geometric cross section in the outer portions of the unitary laminations, for positioning the unitary laminations and for assembling the unitary laminations together.

4. The method of claim 1 wherein the building up of the plurality of unitary laminations includes the step of assembling the unitary laminations on a mounting plate including bores for engaging the aligning element.

5. The method of claim 1 wherein the building up of

the plurality of unitary laminations includes the steps of engaging a first grouping of the orifices formed in the outer portions with an insert rod, and engaging a second grouping of the orifices formed in the outer portions with a single shaft.

6. The method of claim 5 which further includes the step of clamping the outer portions engaged by the single shaft together to secure the assembly of the unitary laminations.

7. A mechanical part, including prototype parts, formed from a specific computer-aided design and which is manufactured by a method comprising the steps of:

manufacturing a plurality of unitary laminations including central portions forming a plurality of elemental layers having a desired shape and a desired thickness for defining the mechanical part, wherein the elemental layers are defined by a prior breakdown of the mechanical part along a plurality of planes, outer portions having substantially the same thickness as the central portions, at least partially surrounding the central portions and including orifices formed therein, and a plurality of frangible bridges connecting the central portions and the outer portions together;

building up the plurality of unitary laminations by engaging the orifices of the outer portions with an aligning element, and forming a self-supporting structure, combining the elemental layers defined by the central portions of the unitary

laminations and assembling a built up plurality of the elemental layers to produce the mechanical part, and combining the outer portions of the unitary laminations and assembling a built up plurality of the outer portions to produce an outer surround connected to the mechanical part by the frangible bridges; and

severing the frangible bridges connecting the built up plurality of the elemental layers which produce the mechanical part and the built up plurality of the outer portions which produce the outer surround, and removing the outer surround formed from the combined outer portions of the unitary laminations from the mechanical part formed from the combined elemental layers forming the mechanical part and separating the mechanical part from the outer surround.

8. The mechanical part of claim 7 wherein the building up of the plurality of unitary laminations includes the step of assembling the unitary laminations on a mounting plate including bores for engaging the aligning element.

9. The mechanical part of claim 7 wherein the building up of the plurality of unitary laminations includes the steps of engaging a first grouping of the orifices formed in the outer portions with an insert rod, and engaging a second grouping of the orifices formed in the outer portions with a single shaft.

10. The mechanical part of claim 9 wherein the

building up of the plurality of unitary laminations includes the step of clamping the outer portions engaged by the single shaft together to secure the assembly of the unitary laminations.

11. The mechanical part of claim 7 wherein the manufacturing of the plurality of unitary laminations further includes the step of forming circular orifices in the outer portions of the unitary laminations, for positioning the unitary laminations and for assembling the unitary laminations together.

12. The mechanical part of claim 7 wherein the manufacturing of the plurality of unitary laminations further includes the step of forming orifices having a polygonal geometric cross section in the outer portions of the unitary laminations, for positioning the unitary laminations and for assembling the unitary laminations together.